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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,677	04/28/2005	Marie-Jose Azzopardi	260178US0PCT	6365
22850 7590 07/17/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER BLACKWELL, GWENDOLYN ANNETTE	
			ART UNIT 1775	PAPER NUMBER
			NOTIFICATION DATE 07/17/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

**Application No.**

10/511,677

**Applicant(s)**

AZZOPARDI ET AL.

**Examiner**

Gwendolyn Blackwell

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 24-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 28-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/04</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-23 and 28-32, in the reply filed on April 18, 2007 is acknowledged. The traversal is on the ground(s) that as the Search Authority did not find lack of unity, then so should the examiner. This is not found persuasive because the process must be specifically adapted to produce the product claimed to have unity of invention (37 C.F.R. § 1.475(b)(1)). The process as claimed does not specifically set forth the limitations of the product as required by the product claims. As the process claims are not specifically adapted to produce the product as claimed, lack of unity of invention is maintained.

The requirement is still deemed proper and is therefore made FINAL.

### ***Specification***

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### ***Arrangement of the Specification***

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.

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(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(g) BRIEF SUMMARY OF THE INVENTION.

(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(i) DETAILED DESCRIPTION OF THE INVENTION.

(j) CLAIM OR CLAIMS (commencing on a separate sheet).

(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

*The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.*

4. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a thickness of at least 5 nm – 200 nm, does not reasonably provide enablement for a thickness of at least 5 nm with no upper limit thickness parameter. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Applicant has claimed the thickness of the first coating to be at least 5 nm in claim 5. This is not in line with the thickness parameters as set forth in Applicant's specification. Clarification is required.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

*The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.*

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6. Claims 1, 13-14, 17, 21, and 29-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite as it is unclear how many substrates should be present. The removal of the commas and “or” with the insertion of the semicolons makes it unclear as to whether the substrate could be one of the many listed or whether it should be a least one from one of the subgroupings due to the semicolon usage. Clarification is required. To further prosecution, the substrate will be considered to be chosen from only one of the many different materials listed in claim 1.

Claim 1 is indefinite because it is unclear whether Applicant wants the second coating to discontinuous, permeable, or discontinuous and/or permeable. Clarification is required.

Claims 13-14 are indefinite as Applicant is using “essentially” as the transitional phrase for the “optionally doped titanium oxide”. This is not a proper transitional phrase. Clarification is required. To further prosecution the term will be interpreted as “comprising”.

Claims 13-14 are indefinite as Applicant has included the limitation that the titanium oxide is “optionally doped”. Is the coating “optionally doped titanium oxide” or “optionally doped” titanium oxide? Clarification is required. To further prosecution the coating will be interpreted as the coating of titanium oxide can be optionally doped.

Claim 17 is indefinite as claim 17 depends from claim 7, wherein claim 7 does not mention grains/crystallites, therefore there is a lack of antecedent basis for “grains/crystallites”.

Claim 17 is indefinite as the second coating now uses the term “indentations/protuberances”, however claim 7 only mentions “protuberances”. Clarification is required.

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Claim 21 recites the limitation "a glazing type" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 29 is indefinite as Applicant is using "essentially" as the transitional phrase for the "optionally doped titanium oxide". This is not a proper transitional phrase. Clarification is required. To further prosecution the term will be interpreted as "comprising".

Claim 29 is indefinite as Applicant has included the limitation that the titanium oxide is "optionally doped". Is the coating "optionally doped titanium oxide" or "optionally doped" titanium oxide? Clarification is required. To further prosecution the coating will be interpreted as the coating of titanium oxide can be optionally doped.

Claim 30 is indefinite as claim 30 depends from claim 13, wherein claim 13 while mentioning "grains or crystallites" does not mention "grains/crystallites", therefore there is a lack of antecedent basis for "grains/crystallites".

Claim 30 recites the limitation "the indentations/protuberances" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC §§ 102/103***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

*(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-13, 15-16, 18-23, and 31-32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over International Patent Application Publication no. WO 02/24971, WO '971.

*Regarding claim 1*

WO '971 disclose a substrate with a photocatalytic coating, (abstract). The coating can be comprised of a sublayer of silica, SiOC, or SiON (hydrophilic) with a layer of photocatalytic TiO<sub>2</sub> based coating formed thereon, (page 7, lines 10-30 and Example 1, page 13, lines 7-20), meeting the limitations of claim 1.

*Regarding claims 2-13, 15-16, 18-23, and 31-32*

The substrate can be transparent and used for different types of glazings, (page 1, lines 8-23), meeting the limitations of claim 2.

As SiOC is one of the materials in claim 1 that can be used for the hydrophilic first coating it would be expected that the SiOC of the prior art would meet the refractive index limitation absent an objective showing to the contrary, meeting the limitations of claim 3.

Claims 4, 19-20, 28, and 32 are considered product by process claims. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claims is unpatentable even though the prior art was made by a different process. *MPEP 2113*.

The SiOC layer is 80 nm thick, (page 13, lines 7-11), meeting the limitations of claim 5.

The surface of the SiOC layer can have a surface roughness of at least 5 or 10 nm, (page 7, lines 4-13), meeting the limitations of claims 6-11.

While the thickness of the TiO<sub>2</sub> layer is not specifically disclosed, absent a showing of criticality with respect to thickness (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the thickness through routine experimentation in order to achieve a hydrophilic coating having the desired anti-misting properties without affecting the optical characteristics of the coated transparent substrate. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art, meeting the limitations of claim 12. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

The TiO<sub>2</sub> layer contains crystallites having a size generally less than or equal to 50 or 40 or 30 nm, (page 5, lines 10-19), meeting the limitations of claim 13.

The surface of the coating can have a surface roughness of between 5.5 and 6.0 nm, (page 6, lines 5-14), meeting the limitations of claim 15.



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The photocatalytic coating follows the roughness of the of the underlayer, (page 7, lines 4-13), meeting the limitations of claim 16.

While the amount of material is not specifically disclosed as claimed by Applicant, absent a showing of criticality with respect to thickness (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the amount of material through routine experimentation in order to achieve a hydrophilic coating having the desired properties without affecting the optical characteristics of the coated transparent substrate. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art, meeting the limitations of claims 18 and 31. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

The  $R_L$  value is at most 20 %, which would encompass at most 12%, with  $a^*$  and  $b^*$  values of less than 2.5, which would encompass the ranges as claimed, (page 14, lines 1-4), meeting the limitations of claim 21.

Example 1 demonstrates a palmitic acid degradation of at least 10 nm/h, (page 13, lines 28-31), meeting the limitations of claim 22.

As the coating of Example 1 meets the structural limitations of Applicant's claim 1, it would be expected that the coating would exhibit the range of water contact angle as set forth in claim 23 absent an objective showing to the contrary, meeting the limitations of claim 23.

11. Claims 1-5, 12-13, 18-23, and 31-32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over United States Patent no. 6,299,981, Azzopardi et al.

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*Regarding claim 1*

Azzopardi et al disclose a transparent substrate having improved hydrophilic properties comprising surface irregularities, (column 1, lines 5-14). Example 1 demonstrates a coating comprised of a first layer of SiOC (hydrophilic) with a second layer of TiO<sub>2</sub> particles dispersed in a SiO<sub>2</sub> binder, (column 4, lines 30-65). In the example a hydrophobic layer is formed thereon, however absent the hydrophobic layer, the coating will exhibit hydrophilic properties, (column 6, lines 3-11). The particles in the coating create a surface having irregularities forming a bumps and hollows (discontinuous and/or permeable) structure, (column 2, lines 34-48), meeting the limitations of claim 1.

*Regarding claims 2-5, 12-13, 18-23, and 31-32*

The transparent substrate can be used for glazings in various applications such as for windows, (column 1, lines 5-14), meeting the limitations of claim 2.

As SiOC is one of the materials in claim 1 that can be used for the hydrophilic first coating it would be expected that the SiOC of the prior art would meet the refractive index limitation absent an objective showing to the contrary, meeting the limitations of claim 3.

Claims 4, 19-20, 28, and 32 are considered product by process claims. The coating of the prior can be made through sol gel, CVD, or pyrolysis, (column 4, lines 11-29). The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claims is unpatentable even though the prior art was made by a different process. *MPEP 2113*.

While the thickness of the SiOC layer and the TiO<sub>2</sub> layer are not specifically disclosed, absent a showing of criticality with respect to thickness (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the

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thickness through routine experimentation in order to achieve a hydrophilic coating having the desired anti-misting properties without affecting the optical characteristics of the coated transparent substrate. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art, meeting the limitations of claims 5 and 12. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

The size of the nanocrystallites is 7 nm, (column 4, lines 56-60), meeting the limitations of claim 13.

While the amount of material is not specifically disclosed as claimed by Applicant, absent a showing of criticality with respect to thickness (a result effective variable), it would have been obvious to a person of ordinary skill in the art at the time of the invention to adjust the amount of material through routine experimentation in order to achieve a hydrophilic coating having the desired properties without affecting the optical characteristics of the coated transparent substrate. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art, meeting the limitations of claims 18 and 31. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As the coating structure of the prior art meets the limitations of the coating as claimed, it would be expected that the coated transparent substrate of Azzopardi et al would meet the optical and physical characteristics of claims 21-22 absent an objective showing to the contrary.

After exposure to light the coating can have a water contact angle of less than 5°, (column 3, lines 23-33), meeting the limitations of claim 23.

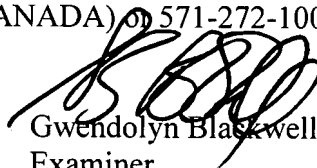
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*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn Blackwell whose telephone number is (571) 272-1533. The examiner can normally be reached on Monday - Thursday; 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Gwendolyn Blackwell  
Examiner  
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